

REVISION								
DESCRIPTION	DATE	CDR.	CHK.	APP.	APP.	APP.	APP.	APP.
A								

GENERAL NOTES:

- ALL WORK RELATING TO THE INSTALLATION OF TRAFFIC SIGNALS SHALL COMPLY WITH APPROPRIATE PROVISIONS OF D.C. DRAWING NO. S-2100, DCDPW STANDARD SPECIFICATIONS, AND CONTRACT SPECIAL PROVISIONS.
- THE CONTRACTOR SHALL SUBMIT TO THE DCDPW CATALOG CUTS OF ALL EQUIPMENT AND MATERIALS TO BE FURNISHED AND INSTALLED. WRITTEN APPROVAL FROM DCDPW SHALL BE SECURED PRIOR TO PROCUREMENT.
- THE LOCATION OF PROPOSED EQUIPMENT SHOWN IS APPROXIMATE. THE LOCATION OF ALL PROPOSED EQUIPMENT AND MATERIAL SHALL BE FIELD LOCATED, VERIFIED, AND APPROVED BY THE ENGINEER PRIOR TO INSTALLATION.
- THE CONTRACTOR SHALL FURNISH AND INSTALL ALL PROPOSED CONDUITS, MANHOLES, POLE FOUNDATIONS, AND CABINET FOUNDATIONS.
- THE CONTRACTOR SHALL FURNISH AND INSTALL ALL TRAFFIC AND TRAFFIC SIGNAL POLES, TRAFFIC SIGNAL CONTROLLERS, CABINETS, MAST ARMS, SIGNS AND ALL MOUNTING HARDWARE.

CABLE NOTES:

- DCDPW PERSONNEL WILL MAKE ALL ELECTRICAL CONNECTIONS INSIDE THE CONTROLLER CABINET. THE CONTRACTOR SHALL MAKE ALL ELECTRICAL CONNECTIONS IN TRAFFIC AND PEDESTRIAN SIGNAL HEADS.
- THE CONTRACTOR SHALL FURNISH AND INSTALL NEW, UNSPLICED 7C 14 AWG STRANDED CABLE TO ALL SIGNAL HEADS (SEE SHEET 2).
- THE CONTRACTOR SHALL FURNISH AND INSTALL NEW 12 PAIR 19 AWG COMMUNICATION CABLE (SEE SHEETS 4, 5 AND 6).

MAST ARM NOTES:

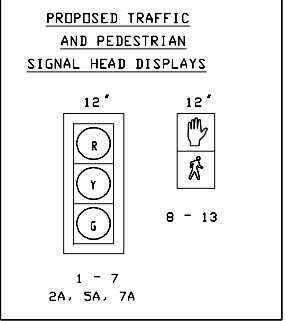
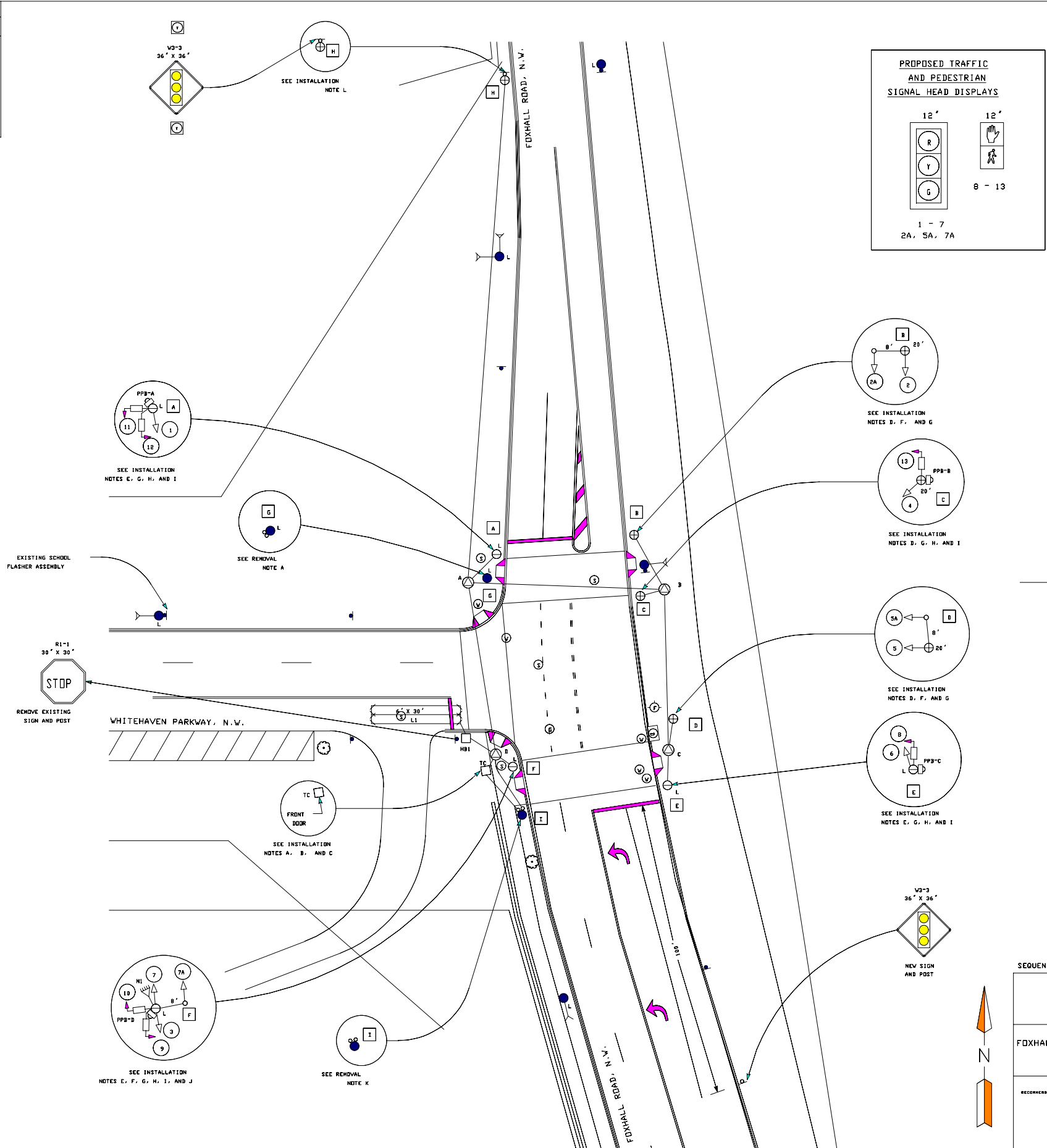
- A BACK PLATE SHALL BE AFFIXED TO EACH MAST ARM MOUNTED SIGNAL HEAD.
- THE BOTTOM OF MAST ARM MOUNTED SIGNAL HEADS SHALL BE 16 FEET (4.9 M) ABOVE THE ROADWAY SURFACE.
- AN ASTRO-BRAC SHALL BE USED TO MOUNT SIGNAL HEADS (2A, 5A, AND 7A) TO MAST ARMS.

INSTALLATION NOTES:

- INSTALL TRAFFIC SIGNAL CONTROLLER CABINET FOUNDATION.
- INSTALL TRAFFIC SIGNAL CONTROLLER CABINET.
- INSTALL TRAFFIC SIGNAL CONTROLLER.
- INSTALL 20-FOOT TALL TRAFFIC SIGNAL POLE WITH TRANSFORMER BASE.
- INSTALL 28-FOOT TALL TRAFFIC SIGNAL POLE ON TRANSFORMER BASE WITH LUMINAIRE.
- INSTALL MAST ARM WITH CAP AND CLAMP.
- INSTALL TRAFFIC SIGNAL HEAD(S).
- INSTALL PEDESTRIAN SIGNAL HEAD(S).
- INSTALL PEDESTRIAN PUSH BUTTON(S).
- INSTALL MICROWAVE VEHICLE DETECTOR.
- INSTALL CONDUIT RISER(S).
- INSTALL ADVANCED WARNING BEACON.

REMOVAL NOTES:

- REMOVE LUMINAIRE.



F.H.W.A REG. NO.	STATE	FED. AID PROJECT NO.	SHEET NO.	TOTAL SHEETS
3	D.C.			

LEGEND:

- TC PROPOSED TYPE 170 TRAFFIC SIGNAL CONTROLLER WITH MODEL 336S CABINET
- L PROPOSED 28 FOOT TALL STREET LIGHT POLE ON TRANSFORMER BASE WITH LUMINAIRE
- 20' PROPOSED 20 FOOT (6 M) TALL TRAFFIC SIGNAL POLE WITH TRANSFORMER BASE
- EXISTING UTILITY POLE, WOOD
- EXISTING UTILITY POLE, WOOD WITH LUMINAIRE
- EXISTING UTILITY POLE (WOOD) WITH LUMINAIRE AND PROPOSED RISER
- EXISTING ANCHOR GUY
- PROPOSED 8 FOOT LONG MAST ARM WITH CAP AND CLAMP
- PROPOSED 3 SECTION VEHICULAR SIGNAL HEAD CONVENTIONAL (ALL LENSES 12 INCHES)
- PROPOSED 2 SECTION PEDESTRIAN SIGNAL HEAD (ALL LENSES 12 INCHES)
- PROPOSED PEDESTRIAN PUSH BUTTON
- PROPOSED INDUCTIVE QUADRUPOLE LOOP DETECTOR
- PROPOSED MICROWAVE VEHICLE DETECTOR
- EXISTING SIGN
- PROPOSED SIGN
- EXISTING STORM CATCH BASIN SQUARE
- EXISTING GAS MANHOLE
- EXISTING SANITARY SEWER MANHOLE
- EXISTING WATER MANHOLE
- PROPOSED DCDPW TRAFFIC SIGNAL MANHOLE
- PROPOSED HAND BOX
- PROPOSED ELECTRICAL PVC CONDUIT
- PROPOSED WHEELCHAIR RAMP
- RIGHT-OF-WAY
- EXISTING FENCE
- EXISTING TREE
- EXISTING SHRUB
- EXISTING FIRE HYDRANT

FIGURE 23

SEQUENCE OF OPERATIONS DRAWING NO. TS-1665		FIELD CHECKED BY
DISTRICT OF COLUMBIA DEPARTMENT OF PUBLIC WORKS BUREAU OF TRAFFIC SERVICES		BAH/JRW
DESIGNED BY		BAH
FOXHALL ROAD AND WHITEHAVEN PARKWAY, N.W.(1)		DRAWN BY
TRAFFIC SIGNAL INSTALLATION		JRW
DATE		10/01
RECOMMENDED		SCALE
CHIEF, TRAFFIC SIGNAL DESIGN BRANCH	DATE	1" = 40'
CHIEF, TRAFFIC SIGNAL OPERATIONS BRANCH	DATE	
CHIEF, TRAFFIC SIGNAL CONSTRUCTION BRANCH	DATE	
CHIEF, TRAFFIC SIGNAL MAINTENANCE BRANCH	DATE	
APPROVED	DATE	SHEET 1 OF 5
CHIEF, TRAFFIC SIGNAL STATION DIVISION	DATE	DRAWING NO. S-862-A

DMJM HARRIS

S.L.P. NO. _____
APPROVED BY _____ DATE _____

Recommendation:

- Once the new developments are completed and operational, a full signal warrant study should be undertaken at this intersection. If it meets signalization warrants based on the full warrant study, the intersection should be signalized.

Issue:

- Speeding on Foxhall Road

Preliminary Improvement(s):

1. Place temporary radar speed monitors on both directions of Foxhall Road near the Field School for a period of two weeks. Repeat the placement of the speed monitoring equipment every three months.
2. Metropolitan Police Department (MPD) automated speed enforcement.

Evaluation:

1. The speed monitors will alert drivers to the posted speed and their actual speed in an effort to slow traffic.
2. The 1500 – 3000 blocks of Foxhall Road is an existing, designated MPD automated speed enforcement zone.

Recommendation:

- Install speed monitors. Repeat the placement of the speed monitoring equipment every three months. Continue MPD automated speed enforcement.

Issue:

- Pedestrian safety along Foxhall Road

Preliminary Improvement(s):

1. Construct sidewalk on the east side of Foxhall Road between Whitehaven Parkway and Garfield Street.

Evaluation:

1. A Sidewalk will allow pedestrians to safely walk along Foxhall Road. The Study Team conducted field evaluations to assess the feasibility of constructing a sidewalk on the east side of Foxhall Road. The field observations indicate that a sidewalk along the east side of Foxhall Road is feasible. Much of this sidewalk could be constructed using existing portions of sidewalk at various locations along the roadway. Few trees would need to be removed, and little utility relocation would be necessary. Retaining walls would need to be constructed at two locations where the ground rises sharply from the edge of the roadway: south of Dexter Street and between Whitehaven Parkway and W Street. Optionally, the sidewalk could be placed above the roadway between Whitehaven Parkway and W Street. The National Park Service owns the land between Edmunds and Fulton Streets. This section is heavily wooded, with a steep drop from the roadway. A narrow sidewalk, located behind the guide rail on the east side is recommended for this location.

Recommendation:

- Construct a sidewalk on the east side of Foxhall Road between Whitehaven Parkway and Garfield Street. Based on information provided by the District of Columbia Office of Public Space, sufficient right-of-way is available for this improvement.

Issue:

- Signage on Foxhall Road

Preliminary Improvement(s):

1. Install parking restriction signs on Foxhall north of Cathedral Avenue.
2. Replace "No Left Turn" sign on southbound Foxhall at Klinge Street.

Evaluation:

1. Parking restriction signs will inform residents of permitted parking hours.
2. This sign is in disrepair, and replacing it will inform motorists of turn restrictions.

Recommendation:

- Install/replace signs.

LOUGHBORO ROAD**Issue:**

- Traffic Operations at intersection with Foxhall Road

Preliminary Improvement(s):

1. Short term: The left lane of westbound Nebraska Avenue is an exclusive left turn lane, which is being used as a shared through/left lane. Change lane use sign to indicate shared through/left movements in left lane.
2. Long term: Attain additional right-of way to construct one new lane in each direction of Loughboro Road/Nebraska Avenue, allowing for two exclusive through lanes in each direction, plus an exclusive turning lane.

Evaluation:

1. This lane does not need to operate as an exclusive left-turn lane, as there is no exclusive turning phase. Allowing through traffic to legally use this lane will increase capacity for westbound traffic. During some times of the day, this lane will act as a *de facto* left-turn lane, which is essentially the same as an exclusive lane.
2. This improvement is projected as a five-year improvement. The following table compares projected five- and ten-year delay and level of service at the intersection, both with the additional lanes and without.

Table 15:
Levels of Service on Foxhall and Loughboro Roads with and without Long-Term Improvements

Condition	Delay (s)	LOS	Change in Delay
AM 5-year without lanes	64.4	E	-60.6%
AM 5-year with lanes	25.4	C	
PM 5-year without lanes	28.0	C	-40.4%
PM 5-year with lanes	16.7	B	
AM 10-year without lanes	67.2	E	-36.0%
AM 10-year with lanes	43.0	D	
PM 10-year without lanes	23.5	B	-39.6%
PM 10-year with lanes	14.2	B	

Recommendation:

- Short Term: Convert the exclusive left turn lane to through-left lane.
- Long Term: Add one new lane in each direction to Loughboro Road/Nebraska Avenue.

Issue:

- Traffic Operations on Loughboro Road between Foxhall and Lowell Roads

Preliminary Improvement(s):

1. Stripe Loughboro Road as two lanes in each direction between Chain Bridge Road and Arizona Avenue.
2. Prohibit peak hour parking on the south side of Loughboro Road between Lowell and Chain Bridge Roads.
3. Prohibit peak hour parking on the north side of Loughboro Road between Indian Road and Arizona Avenue.
4. Add no parking signs on both sides of the above area.
5. Stripe the following lane configuration at Arizona Avenue:
 - Eastbound: exclusive through, shared through/right
 - Westbound: exclusive left, exclusive through

Evaluation:

1. Loughboro is unofficially used as two lanes in each direction through much of this area. Officially striping it as two lanes would increase the capacity of this roadway, but would also increase vehicular speeds and make it difficult for residents to access their driveways. It would also eliminate parking and decrease safety.
2. Parking restrictions would be needed for two-lane operation on the south side of Loughboro Road between Lowell and Chain Bridge Roads.
3. Parking restrictions would be needed for two-lane operation on the north side of Loughboro Road between Indian Road and Arizona Avenue.
4. Parking signs will alert motorists and residents to restrictions.
5. Currently, the intersection is unofficially operating with this lane configuration.

Recommendation:

- Based on the reduction in safety, inconvenience to residents and increase in speed, officially striping Loughboro Road as two lanes in each direction is not recommended. Do not eliminate parking. The westbound section of Loughboro Road, from University Terrace to Arizona Avenue, should be striped as an exclusive left and an exclusive through lane. Do not restripe the eastbound approach.

Issue:

- Lack of driver understanding of the operation of the curb lane as a parking lane on Loughboro Road between Lowell and Maud Streets

Preliminary Improvement(s):

1. Install new striping and parking signs indicating that the curb lane is a parking lane.

Evaluation:

1. Residential parking signs may not be added to this section of Loughboro Road

without a petition from residents¹. Instead, “No Parking Here to Corner” signs could be installed 40 feet from the intersections of Loughboro Road with Lowell Street, Millwood Lane, Glenbrook Road, Macomb Street and Maud Street. Additionally, pavement markings, as shown in Figure 24, could be applied to the roadway. These markings would serve two purposes: they would clearly delineate the parking lane, and they serve to effectively reduce the width of Loughboro Road to one lane in each direction. Figure 24 is a typical sketch of the marking placement. Markings should be placed from Arizona Avenue to Maud Street.

Recommendation:

- Place the pavement markings shown in Figure 24 on Loughboro Road from Arizona Avenue to Maud Street. Install “No Parking Here to Corner” at the intersections in this area of Loughboro Road.

Issue:

- Traffic Operations at Arizona Avenue

Preliminary Improvement(s):

1. Short-Term: Signalize intersection. Until the signal is installed, add "all-way" plate to all existing stop signs at this intersection.

Evaluation:

1. This intersection meets peak hour signalization warrants for both the AM and PM peak hours under existing conditions². A full signal warrant study is recommended. Signalization will improve traffic operations and safety. Adding the “all-way” plate is necessary to communicate adequately to the drivers the operation of the stop-controlled intersection. Additionally, the stop sign for westbound Loughboro Road motorists is partially obscured by trees. A supplemental stop sign should be installed on the left side of westbound Loughboro Road.

Recommendation:

- Perform full warrant study and signalize the intersection. Until such time, add “all-way” plate to all stop signs.

Issue:

- Pedestrian access to Metrobus stops on north side of Loughboro Road

Preliminary Improvement(s):

1. Construct a bus shelter at the bus stop near Palisades Lane.
2. Construct concrete pads for riders to stand on while waiting for the bus at all other bus stops on the north side between Maud Street and Foxhall Road.
3. Place crosswalks on Loughboro Road.

Evaluation:

1. The construction of the new shelter increases pedestrian/commuter safety and comfort. Removes pedestrians from roadway.
2. Bus pads have been constructed.

¹ A petition signed by at least 51% of the residents of the block would be required to enact residential parking.

² Appendix H presents the signal warrant analysis worksheets for this intersection.